

**REMARKS**

Claims 1, 4-8 and 13-15, 17-21 and 24-29 are all of the claims pending in the present Application. Claims 6-8 and 19-20 have been withdrawn. Claims 1, 7 and 17-20 have been amended. Claims 2-3, 16 and 23 have been canceled. Claims 25-29 have been added.

While the claim amendments made herein may help to distinguish the invention over the prior art, Applicant's intention in making the amendments is for the purpose of particularly pointing out the invention, and not for the purpose of distinguishing the invention over the prior art, narrowing the claims, or for any statutory requirements of patentability. Further, notwithstanding any claim amendments made herein, Applicant's intent is to encompass equivalents of all claim elements, even if amended herein or later during prosecution.

Applicant notes that **claim 24** is not the subject of any prior art rejection and is, therefore, presumably allowable.

**Claim 1-5, 13-15, 17 and 18** stand rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Shiozaki (WO 03/044881) in view of Howard et al. (U. S. Patent Pub. No. 2002/0141937).

**Claim 16** stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Shiozaki in view of Howard, and further in view of Tsushima et al. (U. S. Patent No. 6,294,292).

These rejections are respectfully traversed in the following discussion.

**I. THE CLAIMED INVENTION**

An exemplary embodiment of the claimed invention, as set forth in independent claim 1, is directed to a positive active material including base particles able to dope and release lithium ions.

Importantly, the positive active material also includes at least one element selected from the group consisting of Gd, Ce and Yb on at least part of a part of the base particles which is able to come into contact with an electrolyte, and the at least one element is formed on a surface of the base particles, and is not incorporated in the base particles (Application at page 38, lines 16-24; page 39, line 25-page 40, line 5).

Conventional positive active materials include base particles (e.g., LiCoO<sub>2</sub>). Attempts

have been made to modify a surface of these materials with an element of a different kind (e.g., aluminum) to improve electron conductivity. However, this method does not inhibit the oxidative decomposition of the electrolyte in a positive-electrode field (Application at page 2 lines 11-20).

In the claimed invention of claim 1, on the other hand, the positive active material includes at least one element selected from the group consisting of Gd, Ce and Yb on at least part of a part of the base particles which is able to come into contact with an electrolyte, and the at least one element is formed on a surface of the base particles, and is not incorporated in the base particles (Application at page 38, lines 16-24; page 39, line 25-page 40, line 5). This feature may help to inhibit a reaction between the electrolyte and the positive active material and, thus, inhibit a deterioration of performance of a battery (Application at page 11, line 1-page 12, line 9).

## II. THE ALLEGED PRIOR ART REFERENCES

### A. Shiozaki and Howard

The Examiner alleges that Shiozaki would have been combined with Howard to form the invention of claims 1-5, 13-15, 17 and 18. However, Applicant respectfully submits that these alleged references would not have been combined and even if combined, the alleged combination would not teach the features of the claimed invention.

In particular, Applicant respectfully submits that these references are unrelated. Indeed, no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

In fact, Applicant submits that the references provide no motivation or suggestion to urge the combination as alleged by the Examiner. Indeed, these references clearly do not teach or suggest their combination. Therefore, Applicant respectfully submits that one of ordinary skill in the art would not have been so motivated to combine the references as alleged by the Examiner. Therefore, the Examiner has failed to make a prima facie case of obviousness.

Moreover, neither Shiozaki, nor Howard, nor any alleged combination thereof teaches or suggests "at least one element selected from the group consisting of Gd, Ce and Yb on at least part of a part of the base particles which is able to come into contact with an electrolyte,

*wherein said at least one element is formed on a surface of said base particles, and is not incorporated in said base particles*", as recited in claim 1 and similarly recited in claim 24 (Application at page 38, lines 16-24; page 39, line 25-page 40, line 5). As noted above, this feature may help to inhibit a reaction between the electrolyte and the positive active material and, thus, inhibit a deterioration of performance of a battery (Application at page 11, line 1-page 12, line 9).

Clearly, these features are not taught or suggested by Shiozaki or Howard.

Indeed, Shiozaki simply teaches a positive active material including an oxide represented by the formula  $\text{Li}_x\text{Mn}_a\text{Ni}_b\text{Co}_c\text{O}_d$ . That is, nowhere does Shiozaki teach or suggest at least one element selected from the group consisting of Gd, Ce and Yb on at least part of a part of the base particles which is able to come into contact with an electrolyte, and the at least one element is formed on a surface of the base particles, and is not incorporated in the base particles, as in the claimed invention.

In fact, the Examiner expressly concedes that Shiozaki does not teach or suggest these features on page 5 of the Office Action.

Likewise, Howard does not teach or suggest these features. Indeed, Howard simply teaches a spinal battery cathode material in which the spinel particles are mixed with a mixture of a lithium salt and a metal oxide (Howard at [0018]). Howard teaches that the metal oxides may include  $\text{Sc}_2\text{O}_3$ ,  $\text{Y}_2\text{O}_3$ ,  $\text{ZrO}_2$ ,  $\text{HfO}_2$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{Ga}_2\text{O}_3$ ,  $\text{La}_2\text{O}_3$ ,  $\text{SiO}_2$ ,  $\text{GeO}_3$  and mixtures thereof (Howard at [0022]). That is, like Shiozaki, nowhere does Howard teach or suggest at least one element selected from the group consisting of Gd, Ce and Yb on at least part of a part of the base particles which is able to come into contact with an electrolyte, and the at least one element is formed on a surface of the base particles, and is not incorporated in the base particles, as in the claimed invention.

Thus, Howard does not make up for the deficiencies in Shiozaki.

In addition, Applicant would again point out that the Examiner's rejection is erroneous, as pointed out in the Amendment filed herein on October 8, 2009.

First, with respect to **claims 4 and 17**, Applicant would again point out that the Examiner's allegation that Shiozaki discloses  $\text{LiCoO}_2$  is not correct. That is, the Examiner again

alleges that "Shiozaki further discloses that the positive active material may comprise  $\text{LiCoO}_2$  which corresponds to point A on fig. 1." on page 4 of the Office Action. However, the point "A" on the ternary phase diagram on page 7 is a point corresponding to  $\text{LiMn}_{0.5}\text{Ni}_{0.5}\text{O}_2$ , but not a point corresponding to  $\text{LiCoO}_2$ . The point corresponding to  $\text{LiCoO}_2$  is a bottom-left corner of the ternary phase diagram. Accordingly, the  $\text{LiCoO}_2$  falls outside the composition range which is present on the perimeter of or inside the quadrilateral ABCD shown in the ternary phase diagram as a claim scope of Shiozaki.

The Examiner neglected to respond to this argument by Application. Thus, Applicant respectfully requests that the Examiner respond to this argument in a next Office Action.

Second, with respect to **claims 5 and 18**, the Examiner alleges on page 4 of the Office Action that "Shiozaki et al. further discloses a positive active material corresponding to the claimed composition wherein  $a=0.3$ ,  $b=0.3$ ,  $c=0.4$  and  $0.95 < x < 1.3$  at the point indicated in fig. 1". However, the point indicated in Fig. 1 is incorrect. That is, the arrow in Fig. 1 on page 4 of the Office Action does not indicate a point where  $a=0.3$ ,  $b=0.3$ ,  $c=0.4$  and  $0.95 < x < 1.3$ . Instead, the point was correctly shown in Figure 1 on page 7 of the Office Action dated June 16, 2009.

Therefore, Applicant respectfully submits that these alleged references would not have been combined and even if combined, the combination would not teach or suggest each and every feature of the claimed invention. Therefore, the Examiner is respectfully requested to withdraw this rejection.

#### B. Tsushima

The Examiner alleges that Shiozaki and Howard would have been further combined with Howard to form the invention of claim 16. However, Applicant respectfully submits that these alleged references would not have been combined and even if combined, the alleged combination would not teach the features of the claimed invention.

In particular, Applicant respectfully submits that these references are unrelated. Indeed, no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

In fact, Applicant submits that the references provide no motivation or suggestion to urge

the combination as alleged by the Examiner. Indeed, these references clearly do not teach or suggest their combination. Therefore, Applicant respectfully submits that one of ordinary skill in the art would not have been so motivated to combine the references as alleged by the Examiner. Therefore, the Examiner has failed to make a prima facie case of obviousness.

Moreover, neither Shiozaki, nor Howard, nor Tsushima, nor any alleged combination thereof teaches or suggests "*at least one element selected from the group consisting of Gd, Ce and Yb on at least part of a part of the base particles which is able to come into contact with an electrolyte, wherein said at least one element is formed on a surface of said base particles, and is not incorporated in said base particles*", as recited in claim 1 and similarly recited in claim 24 (Application at page 38, lines 16-24; page 39, line 25-page 40, line 5). As noted above, this feature may help to inhibit a reaction between the electrolyte and the positive active material and, thus, inhibit a deterioration of performance of a battery (Application at page 11, line 1-page 12, line 9).

Clearly, these features are not taught or suggested by Tsushima.

Indeed, Tsushima simply teaches a secondary power source having a high upper limit voltage. That is, like Shiozaki and Howard, Tsushima does not teach or suggest at least one element selected from the group consisting of Gd, Ce and Yb on at least part of a part of the base particles which is able to come into contact with an electrolyte, and the at least one element is formed on a surface of the base particles, and is not incorporated in the base particles, as in the claimed invention.

Thus, Tsushima does not make up for the deficiencies in Shiozaki and Howard

Therefore, Applicant respectfully submits that these alleged references would not have been combined and even if combined, the combination would not teach or suggest each and every feature of the claimed invention. Therefore, the Examiner is respectfully requested to withdraw this rejection.

### III. FORMAL MATTERS AND CONCLUSION

Applicant notes that claim 1 has been amended to address the Examiner's objection thereto.

In view of the foregoing, Applicants submit that claims 1, 4-8 and 13-15, 17-21 and 24-29, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,



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